REMARKS

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated July 19, 2002. In view of the amendments set out above and the following remarks, reconsideration is respectfully requested.

The specification has been amended to conform the Summary of the Invention section to the currently pending claims. No new matter has been added.

The drawings were objected to under 37 CFR 1.83(a) for failing to show every feature of the invention specified in the claims. The Office Action states that the separation element comprising two or more hollow pleated pack sections with open joiner caps as in claim 1 must be shown. Applicants respectfully point out that Figure 14a showing pack sections connected by joiner caps was added in the amendment filed July 11, 2001. Accordingly, Applicants respectfully submit that the rejection should be withdrawn.

Claims 1 and 14-19 were rejected under 35 U.S.C. §112, first paragraph. Applicants respectfully traverse this rejection. However, in order to expedite prosecution, independent claim 1 has been amended to remove the reference to open joiner caps including a polymeric, thermoplastic or elastomeric material and end caps including a thermoplastic material. However, the claims still encompass end caps as well as joiner caps comprising a polymeric or elastomeric material, which inherently includes thermoplastic materials. Thus, it is respectfully submitted that with these amendments to the claims, the basis for rejection under 35 U.S.C. §112 has now been overcome and should be withdrawn.

Claims 1 and 14-19 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,984,325 to Rosaen (hereinafter referred to as "Rosaen") in view of U.S. Patent No. 4,517,085 to Driscoll et al. (hereinafter referred to as "Driscoll"), U.S. Patent No. 5,543,047 to Stoyell et al. (hereinafter referred to as "Stoyell") and U.S. Patent No. 4,228,012 to Pall (hereinafter referred to as "Pall"). This rejection is respectfully traversed.

None of the cited references disclose or suggest the invention as defined by the pending claims. For example, none of the references disclose or suggest a separation element including adjacent open joiner caps being secured to coaxially connect two or more pack sections and open joiner caps into a hollow separation arrangement being at least about 40 inches in length and having an interior diameter of at least about 2 inches.

As the Office Action correctly notes, Rosaen, the primary reference, fails to disclose a separation element including adjacent open joiner caps secured to coaxially connect two or more pack sections and the open joiner caps into a hollow separation arrangement as set forth in the claims. However, the Office Action goes on to assert that Driscoll teaches a separation element including open joiner caps and that it would be obvious to one of skill in the art to modify the

joiner caps of the separation element of Rosaen by substituting them with those taught by Driscoll. Applicants respectfully disagree.

Rosaen teaches directly away from the claimed invention. Rosaen is directed to a filter device that allows a fouled filter cartridge to be replaced by a clean, unused adjacent filter cartridge. In order to provide an adjacent filter cartridge that is unused, Rosaen provides a blind end cap 30 (i.e., the front end cap 30 of adjacent cartridge filter 24) disposed between the cartridge filters 22, 24 to prevent fluid from flowing from one filter cartridge into the adjacent filter cartridge. As explained at column 3 line 58 to column 4 line 7, fluid flows from cartridge filter 22 to the fluid outlet 16, without passing through adjacent filter cartridge 24. The filter device of Rosaen is intended to direct fluid through a single cartridge 22 and to provide an adjacent unused cartridge as a replacement. "The present invention obviates the above disadvantages of the previously known filter elements by providing a cartridge filter wherein dirty or clogged filter elements may be replaced by clean filter elements." (See column 1, lines 42-46). "The present invention permits a clean filter to be interchanged with a dirty or clogged filter." (See column 5, lines 5 and 6).

One of skill in the art would NEVER modify Rosaen to connect the cartridge filters to form a hollow separation arrangement allowing fluid to flow through the connected pack sections as suggested in the Office Action. Rosaen is directed to providing an adjacent unused filter cartridge to replace the fouled filter cartridge. Fluidly connecting adjacent filter cartridges of Rosaen with open joiner caps would foul all adjacent cartridges, defeating the intended purpose of Rosaen of providing an adjacent clean cartridge to replace the fouled cartridge. Accordingly, Rosaen not only teaches directly away from the modification suggested in the Office Action, but the modification would render the filter device of Rosaen unsatisfactory for its intended purpose. According to the MPEP §2143.03, "If the proposed modification would render the prior art unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification". Applicants respectfully submit the obviousness rejection is improper and should be withdrawn.

Furthermore, even in combination, the references do not disclose or suggest a hollow separation arrangement being at least 40 inches in length and having an interior diameter of at least about 2 inches. None of the cited references disclose or suggest any element lengths or any interior diameters. Contrary to the assertion in the Office Action, the interior diameter of the filter module of Driscoll is not dependent on the number of spirals or windings, but rather the interior diameter is equal to the diameter of the filtrate tube 90. Driscoll does not disclose or even suggest any filtrate tube diameters, let alone a diameter of at least about 2 inches.

Additionally, nothing in any of the cited references suggests the desirability of the combination of a length of at least about 40 inches and an interior diameter of at least about 2

inches. This combination of length and diameter is highly advantageous, as explained in the specification. According to the MPEP §2143.01, the mere fact that references can be modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the modification. Since the cited references provide no suggestion as to the desirability of a length of at least about 40 inches or an interior diameter of at least about 2 inches, let alone the combination of a length of at least about 40 inches and an interior diameter of at least about 2 inches, prima facie obviousness has not been established.

In summary, there is nothing in the cited references that would lead one of ordinary skill in the art to the present invention as defined in the pending claims.

In view of the amendment and remarks recited herein, the application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue.

Should there remain any issues outstanding, the Examiner is invited to call the undersigned at her Washington, D.C. office.

Respectfully submitted,

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Date: September 30, 2002
SDS:ves

PATENT
Attorney Docket No. 168567/PALL

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

CONNORS et al.

Application No. 09/091,508 Art Unit: 1723

Filed: October 30, 1998 Examiner: M. Ocampo

For: SEPARATION ARRANGEMENT

AMENDMENTS TO SPECIFICATION, CLAIMS, AND ABSTRACT MADE IN RESPONSE TO OFFICE ACTION DATED JULY 19, 2002

Amendments to the paragraph beginning at page 3, line 9:

In accordance with one aspect, the present invention is directed to separation elements for removing one or more components from a fluid flowing through the separation element, where the separation element comprises two or more hollow pack sections, open joiner caps, and first and second end caps. Each hollow pack section includes a plurality of pleats, a retainer, first and second ends, and a porous medium. The plurality of pleats have roots, crowns, legs extending between the roots and the crowns, an inner periphery at the roots defining a upstream side, and an outer periphery at the crowns defining a downstream side. The height of each pleat is greater than (D-d)/2, where D is the outer diameter at the outer periphery of the pleats and d is the inner diameter at the inner periphery of the pleats. The retainer is disposed around the plurality of pleats. The porous medium comprises a polymeric material or a glass fiber material. The open joiner caps are attached to at least one end of each of the two or more pack sections and adjacent open joiner caps are secured to coaxially connect the pack sections and open joiner caps into a hollow separation arrangement which is at least about forty inches in length and has an interior diameter of at least about two inches. The first and second end caps are attached to the hollow separation arrangement. One of the first and second end caps comprises a seal which has an outside diameter greater than the largest outside diameter of the hollow separation arrangement. The ~~joiner caps and the~~ end caps include a polymeric~~, thermoplastic~~ or elastomeric material.

Amendments to the paragraph beginning at page 3, line 21:

In ~~accordance with a further aspect, the present invention is directed to~~ some embodiments, separation elements for removing one or more components from a fluid flowing through the separation element~~, where the separation element comprises~~ comprise a hollow pleated pack and first and second end caps. The hollow pleated pack includes a plurality of pleats, a retainer, first and second ends, and a porous medium. The plurality of pleats includes roots, crowns, legs extending between the roots and the crowns, an inner periphery at the roots defining an upstream side, and an outer periphery at the crowns defining a downstream side. Each pleat has a height greater than (D-d)/2 where D is the outer diameter at the outer periphery of the pleats and d is the inner diameter at the inner periphery of the pleats. The retainer is disposed around the pleats. The porous medium comprises a polymeric material or a glass fiber material. The hollow pleated pack is at least forty inches in length and has an interior diameter of at least two inches. Each end cap is connected to an end of the pack. One of the first and second end caps includes a seal having a larger outside diameter than the largest outside diameter of the hollow pleated pack and the other end cap. The end caps include a polymeric, thermoplastic or elastomeric material.

Amendments to the paragraph beginning at page 3, line 28:

In ~~accordance with a further aspect, the present invention is directed to~~ some embodiments, separation elements~~, where the separation element comprises~~ comprise a pleated pack and an end cap. The pleated pack includes a porous medium and a first end and has a length greater than about forty inches and an interior diameter greater than about two inches. The end cap includes a first segment and a second segment mounted to the first end of the cap . The first and second segments are arranged to slide with respect to one another. The end cap is extendable from a first position in which the first and second end caps are spaced a first distance from each other to a second position in which the first and second end caps are spaced a second distance from each other. The second distance is greater than the first distance, and the end cap maintains a fluid tight seal in both positions.

Amendments to the paragraph beginning at page 4, line 9:

In ~~accordance with a further aspect, the present invention is directed to~~ some embodiments, separation elements~~, where the separation element comprises~~ comprise a pack, which includes a porous medium and a first end, and an end cap, having a first segment, a

second segment mounted to the first end of the pack, and a sealing member coupled to at least one of the first and second segments. The first segment is slidably engaged with the second segment such that the first segment is movable between first and second positions. In the first position, the sealing member is relaxed, and in the second position, the sealing member is compressed by the first and second segments and thereby energized and has an outer diameter greater than the outer diameter of the second segment of the end cap.

Amendments to the paragraph beginning at page 4, line 18:

~~In embodiments of the present invention, a~~A separation assembly may comprise a support cage and a separation element. The separation element is removably mounted in the support cage and comprises a pack having an inner region and first and second ends which include a porous medium having pleats in a laid-over pleat configuration, a retainer arranged with the pack to maintain the pleats in the laid-over configuration, and first and second end caps which are connected to the first and second ends of the pack. The separation element is free of any support structure in the inner region of the pack.

Amendments to the paragraph beginning at page 4, line 27:

~~In embodiments of the present invention, a~~A separation assembly may also comprise a support cage having a first end and a separation element removably mounted in the support cage. The separation element includes a pack and at least one end cap mounted to the pack. The at least one end cap is extendable to allow the separation element to move from a position removed from the first end of the support cage to a position in proximity to or in contact with the first end of the support cage to reduce loading on the separation element.

Amendments to the paragraph beginning at page 5, line 3:

~~In embodiments of the present invention, a~~A separation assembly may further comprise a support cage having a first end, a seat arrangement, and a separation element removably mounted in the support cage. The separation element includes a pack and at least one end cap mounted on the pack. The at least one end cap includes a seal arrangement which slidably engages the seat arrangement. The separation element is axially movable within the support cage from a first position. The seal arrangement engages the seat arrangement and the separation element is spaced from the first end of the support cage to a second position wherein

the seal arrangement engages the seat arrangement of the separation element and is closer to the first end of the support cage.

Amendments to the paragraph beginning at page 5, line 14:

In some embodiments ~~of the present invention~~, an end cap for capping an end of a separation pack may comprise a first segment including a first surface mountable to the end of the separation pack and a second segment including a sealing surface. The first and second segments are extendably connected such that the second segment is movable relative to the first segment.

Amendments to existing claims:

1. (Five Times Amended) A separation element for separating one or more components from a fluid flowing through the separation element, the separation element comprising:

(a) two or more hollow pleated pack sections, each pack section having a plurality of pleats, wherein the plurality of pleats includes roots, crowns, legs extending between the roots and the crowns, an inner periphery at the roots defining an upstream side, and an outer periphery at the crowns defining a downstream side and wherein each pleat has a height h greater than (D-d)/2 where D is the outer diameter at the outer periphery of the plurality of pleats and d is the inner diameter at the inner periphery of the plurality of pleats, a retainer disposed around the pleats, first and second ends, and a porous medium comprising a polymeric material or a glass fiber material;

(b) open joiner caps attached to at least one end of each of the two or more pack sections, adjacent open joiner caps being secured to coaxially connect the pack sections and open joiner caps into a hollow separation arrangement being at least about 40 inches in length and having an interior diameter of at least of about 2 inches; and

(c) first and second end caps attached to the hollow separation arrangement, wherein one of the first and second end caps comprises a seal having an outside diameter greater than the largest outside diameter of the hollow separation arrangement, ~~the open joiner caps and~~ the end caps including a polymeric ~~, thermoplastic~~ or elastomeric material.